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DAFTAR ISI

A STUDY ON THE SHARES OF SEVERAL INDEPENDENT VARIABLES IN PREDICTING THE DOMESTIC GAS PRICE

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ABSTRACT

End users of natural gas have long waited for the government regulation on a more rational gas price. In 2017, the answer to the end users is the new Energy and Mineral Resources Ministerial Decree number 434 K/12/MEM/2017 on the supervision of energy business activities, one of which is the natural gas sector. Prior to the stipulation, the price of natural could reach over $ 12 / MM BTU. Thus, the decree stipulates the price of natural gas should be $ 9,95 / MMBTU.

This paper aims at capturing the closer profiles of variables that might have profound impact on the price of domestic natural gas. Analytical Data Tools used in this study are the IBM – SPSS and XLSTAT

In the end, the study resulting the price range suggestion, that is in still in line with the government suggested price

INTRODUCTION

Major gas end users such as PLN and other industries had long been waited for natural gas price adjustment as many considered that the domestic gas is overly priced.

Prior to the the Energy and Mineral Resources Minestrial Decree number 434 K/12/MEM/2017 on the supervision of energy business activities, one of which is the natural gas sector , the price of natural gas could reach over $ 12 / MM BTU. The new stipulation regulates the price of natural gas should be $ 9,95 / MMBTU

This paper aims at zooming in the pictures of several variables that might have profound impact on the price of domestic natural gas.

Next stage is the processing of data. Analytical Data Tools used in this study are the IBM – SPSS and XLSTAT. The software will produce various graphical illustrations to help analyze the information.

Last but least, the outcome of data processing is the multi – variable linear regression. Towards the end of study, the said data modeling could be used to predict the natural domestic gas price.

FLOW OF WORK

The flow of work in this particular study is broken down into several stages.

First of all, raw data is gathered from secondary data that has been published from various public domains. Further, the raw data is limited to observe the gas price during the end of 2015.
The equation also suggests that the independent variables used in the equation generate the gas price range between $7to $10 per MMBTU gas sold.

Interestingly enough, the result from the above equation is in harmony with the price suggested by the government.
The graphical illustration by the IBM – SPPS (below) produces a number of bars representing their contributions to building the gas price.

The graphic shows that gas purchased at well head and the toll fee stipulated by the downstream supervisory body that can be considered as controlling variable in predicting the gas price.

Further increase in well head price could automatically inflate the gas price offered to the market. Likewise, if the toll fee is overly priced, this would've been significant price upward adjustment for the buyers.

THE DISCUSSION

The multi – variable linear regression generates the model equation as follow:

Gas Price = 5.73 + 1.26*Well Head
– 0.04*Diameter – 0.006*Length
+ 2.74*Toll Fee – 0.28* Inflation

Based upon the previously computed multi – variable linear regression, several parameters are found to be related as parts of a structure forming the gas price.

The equation model above works out well in fitting the predictors. Thus, as seen in the following graphic, the gas price fits linearly the predictor line showing that the equation can be proposed as the model that can put all variables in the loop.
The next graphical illustration further signifies contribution of each variable in forming the gas price.

The first prominent standing tall visually identified as the Well Head. The bar is found to be set as the highest among others, pointing out that the position of well price proportionately contributes to the gas price. This information is coherent with the fact that the fundamental floor for the gas price in the market is the gas purchased at well head.

This study has also discovered unique information; the other next three variables: the length, the diameter of pipelines, and the toll free (charged by regulator) respectively share the lower chunks of the gas price pie.
Last but not least, our linear multi variable regression model suggests that the inflation is disproportionately related to the gas price.

As shown before, the distribution seems to be imbalance. The density is in one side standing as one densest single bar symbolizing any length less than 0.002 to over 0.008 km. On the other side, three bars are grouped together representing length between 450 km to over 600 km. Hence, the histogram illustration of length wraps up that length is less significant as dependent variables.

The histograms above indicate the insignificant role of diameter as far the gas price is concerned. The distribution of the histograms generates disproportional figures. The histogram is divided into two groups. The first contains diameter ranging from 5” to 18” and the other extreme accommodate size ranging from 28” to 36”.

Thus, the histogram illustration of diameter concludes that this variable is less significant as dependent variables.
In more detail information into the subject matter, the above graphical interpretation leads to the explanation the well head price commonly agreed among sellers and buyers are 2(two) and 5(five) dollars per MMBTU. In the market, the gas price is made of those wellhead prices. Then, any buyer should use as handy tools the price mention above in predicting the gas price. Knowing the gas price at well head is the first effective step when negotiating with seller in order to earn the final expected price.

The histograms of natural gas purchased at well head signify that the gas price is proportionately propelled by the dynamic of well head price.

The histograms above clearly show that inflation is an independent variable that inversely corresponds to the domestic gas price.

In this particular study, inflation is being the only one variable that is indirectly related to the technical aspects of natural gas.

Unlike the other parameters such as pipeline diameter, length, and toll fee that all directly related to the operation of gas delivery, inflation is rather the macro – economic general perspective functioning as the predictor in predicting the gas price.

After computing all data using excel data analysis coupled with XL STAT that ends up generating the equation multi – variable linear, inflation is the only independent variable that is negative.

The generally acceptable rule of thumb that gas price is attached to the dynamic of inflation, might not be applicable for the domestic gas price. The rule of regulator has made the domestic gas price seems to be inflation free. Therefore, involving inflation as a predictor can surely downgrade the value of the projected domestic gas price.

CONCLUSION

1. The multi – variable linear regression generates the model equation as follow: Gas Price = 5.73 + 1.26*Well Head 0.04*Diameter – 0.006*Length
2. + 2.74*Toll Fee – 0.28* Inflation.
3. The gas price produced from the above equation ranging from $7 to $ 10 / MMBTU. The range is in line with the government suggested price; $ 9.95 / MMBTU.

4. Three variables; the length, the diameter of pipelines, and the toll free respectively share the lower value in predicting the gas price.
5. Involving inflation as a predictor can potentially drag the gas price downward, due to the fact that domestic gas price is regulated by government.
6. The natural gas purchased at well head signifies that the gas price is proportionately propelled by the dynamic of well head price.

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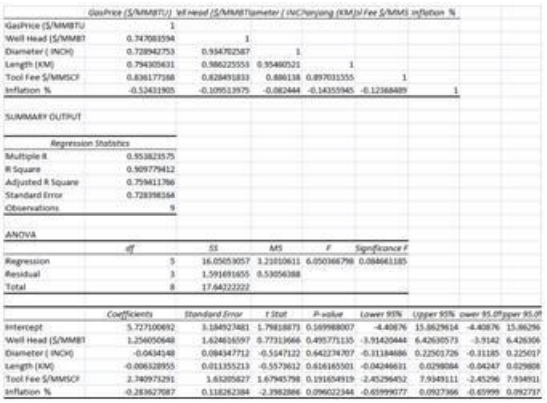
APPENDIX

GasPrice ($/MMBTU)	WellHead ($/MMBTU)	Diameter (INCH)	Length (KM)	Tool Fee $/MMSCF	Inflation %
5	2	16	30.280	0.07	6.59
5.5	2	10	22.560	0.07	9.8
6	2	12	9.127	0.07	4.9
6.6	2	6	3.600	0.07	5.1
7	2	16	3.000	0.07	5.4
7.5	5	28	536	0.44	4.3
7	5	28	468	0.62	8.4
8	5	36	629	1.47	8.4
10	5	32	629	1.42	2.37



GasPrice ($/MMBTU)	Well Head ($/MMBTU)	Diameter (INCH)	Panjang (KM)	Tool Fee $/MMSCF	Inflation %
5.676	2	16	30.280	0.07	6.59
5.075	2	10	22.560	0.07	9.8
6.463	2	12	9.127	0.07	4.9
6.701	2	6	3.600	0.07	5.1
6.186	2	16	3.000	0.07	5.4
7.386	5	28	536	0.44	4.3
7.147	5	28	468	0.62	8.4
8.110	5	36	629	1.47	8.4
9.857	5	32	629	1.42	2.37
8.673	5	32	30.280	0.07	6.86